

Staff Handbook

Name	<i>Prof. Widodo, S. P., M.Sc., Ph.D</i>		
Post	<i>Food Biotechnology</i>		
Academic career	<i>Professor (Prof)</i>	<i>Universitas Gadjah Mada</i>	<i>2021</i>
	<i>Post-doctoral qualification</i>	<i>Post-doc. (JIRCAS Tsukuba Japan)</i>	<i>2009</i>
	<i>Doctorate (Science)</i>	<i>University of Melbourne Australia</i>	<i>2008</i>
	<i>Graduate degree (Biotechnology)</i>	<i>The University of New South Wales</i>	<i>2003</i>
	<i>Undergraduate degree</i>	<i>Universitas Gadjah Mada</i>	<i>1991</i>
Employment	<i>Professor</i>	<i>Universitas Gadjah Mada</i>	<i>2020-present</i>
	<i>Associate Professor</i>	<i>Universitas Gadjah Mada</i>	<i>2012-2020</i>
	<i>Assistant Professor</i>	<i>Universitas Gadjah Mada</i>	<i>2004-2012</i>
Research and development projects over the last 5 years	<p><i>Research projects:</i></p> <ol style="list-style-type: none"> <i>1. Production of Exopolysaccharides in Lactobacillus casei Strains from the Digestive System (2020-2021)</i> <i>Source of funds: PMDSU Batch V</i> <i>2. Study on Utilization of Kluyveromyces lactis Isolate from Goat's Milk as a Starter for Kefir Fermentation (2021)</i> <i>Source of funds: Final Project Recognition, UGM</i> <i>3. Study of Superior Proteolytic Lactic Acid Bacteria and Its Application in Preservation and Improvement of Feed Protein Quality (2020)</i> <i>Source of funds: Final Project Recognition, UGM</i> <i>4. The Relationship between Alpha-S1 Casein Variations, Beta and Kappa Variations in Dairy Goats with the Quality Display of Milk and Cheese Products Produced (2020)</i> <i>Source of funds: Applied Research, PTNBH-Kemenristekdikti</i> <i>5. Characterization and Analysis of Homologous Expression of Exopolysaccharide Synthesizing Genes (EPS) from Lactobacillus casei Strains AP and AG (2020)</i> <i>Source of funds: Basic Research, PTNBH-Kemenristekdikti</i> <i>6. Utilization of Inulin from Dahlia Bulbs as Prebiotics and Its Application as Health Food (2020)</i> <i>Source of funds: Basic Research, PTNBH-Kemenristekdikti</i> <i>7. Utilization of Pediococcus acidilactici Probiotics from the Human Digestive System as Antihyperglycemic and Antihyperlipidemic Agents in Diabetes Model Rats (This revision and proposal are</i> 		

	<p><i>officially submitted) (2020)</i></p> <p><i>Source of funds:Final Project Recognition, UGM</i></p> <p>8. <i>Screening for Probiotic of Lactic Acid Bacteria Isolated from The Digestive Tract of A Native Aceh Duck (Anas platyrhynchos) (2020)</i></p> <p><i>Source of funds:PTNBH-Kemenristekdikti</i></p> <p>9. <i>Growth Ability of Lactic Acid Bacteria in Tomato Extract as an Alternative Culture Media (2020)</i></p> <p><i>Source of funds:Thematic Grant for Laboratory Faculty of Animal Science UGM</i></p> <p>10. <i>Optimization of Increased Production of Butyric Acid as the Final Product of Lactobacillus casei and Pediococcus acidilactici Fermentation from the Human Digestive Tract (2019)</i></p> <p><i>Source of funds: Final Project Recognition Program, UGM</i></p> <p>11. <i>Study on the Efficacy of Fermented Milk Products with Indigenous Strains of Probiotic Starters from the Human Digestive System as Health Food (2019)</i></p> <p><i>Source of funds: Leading University Applied Research, Ristekdikti</i></p> <p>12. <i>Utilization of Inulin from Dahlia Bulbs as a Prebiotic and Its Application as Health Food (2019)</i></p> <p><i>Source of funds: Basic Research, Ristekdikti</i></p> <p>13. <i>Analysis of Bile Salt Hydrolase (BSH) Gene Expression in Lactobacillus casei strain AP as an Evaluation of the Mechanism and Role of Probiotic Resistance to Bile Salf (2019)</i></p> <p><i>Source of funds: Research by Young Lecturers, UGM</i></p> <p>14. <i>Detection of Bile Salt Hydrolase Activity on Lactobacillus and Pediococcus Strains as a Defense Mechanism against Bile Acid (2019)</i></p> <p><i>Source of funds: Thematic Research Grant for the Faculty of Animal Science Laboratory UGM</i></p> <p>15. <i>Utilization of Inulin from Dahlia Bulbs as Prebiotics and Its Application as Health Food (2018) Competency-Based Research (PBK), Ristekdikti</i></p> <p>16. <i>Study on the Efficacy of Fermented Milk Products with Indigenous Strains of Probiotic Starters from the Human Digestive System as Health Food (2018)</i></p> <p><i>Source of funds: Applied Research for Higher Education (PTUPT), Ristekdikti</i></p> <p>17. <i>Development of Milk Fermentation Starter Culture: Evaluation of</i></p>
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	<p><i>Cholesterol Assimilation Ability In Vitro By Cultures of Lactobacillus paracasei M104, Pediococcus pentosaceus M103 and Lactobacillus casei AP and AG (2018)</i></p> <p><i>Source of funds: Laboratory Thematic Grant, Faculty of Animal Science UGM</i></p> <p>18. <i>Study on Synthesis of Conjugated Linoleic Acid (CLA) from Indigenous Strains of Human Probiotics and Evaluation of Its Potential as Antihypercholesterolemic and Antidiabetic Agents in Experimental Rats (Rattus novergicus) (2017)</i></p> <p><i>Source of funds: Competency Grant (HIKOM)</i></p> <p>19. <i>Molecular and Cellular Studies on the Utilization of Inulin Prebiotics by Indigenous Probiotic Strains of Human Origin and Adherence to Gastric Mucin In Vitro (2017)</i></p> <p><i>Source of funds: Leading Research in Higher Education (PUPT) DIKTI</i></p> <p>20. <i>Product Development of Fermented Goat's Milk Using Cultures of Lactobacillus paracasei M104 and Pediococcus pentosaceus M103 (2017) Thematic Laboratory Faculty. UGM</i></p> <p>21. <i>Molecular and Cellular Studies on the Utilization of Inulin Prebiotics by Indigenous Probiotic Strains of Human Origin and Adherence to Gastric Mucin In Vitro (Chairman) (2016)</i></p> <p><i>Source of funds: Higher Education Leading Research (PUPT) DIKTI</i></p> <p>22. <i>Synthesis Study of Conjugated Linoleic Acid (CLA) from Human Indigenous Strains of Probiotics and Evaluation of Its Potential as Antihypercholesterolemic and Antidiabetic Agents in Experimental Rats (Rattus novergicus) (Single Researcher)(2016)</i></p> <p><i>Source of funds: Competency Grant (HIKOM)</i></p> <p>23. <i>Evaluation of Lactic Acid Bacteria Isolate from Goat's Milk as a Starter for Fermented Milk Production (2016)</i></p> <p><i>Source of funds: Thematic Grant for Laboratory Faculty of Animal Science UGM</i></p> <p>24. <i>Effects of Indigenous Probiotic Supplementation of Encapsulated Lactic Acid Bacteria on Production Performance and Histology of Turkey Immune Organs in the (2016)</i></p> <p><i>Source of funds: Starter Phase of Postgraduate Research Grants, Faculty of Animal Science, UGM</i></p> <p>25. <i>The Role of Kombucha Starter in Probiotic Goat Milk Fermentation (2016)</i></p>
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Source of funds: Postgraduate Research Grants Faculty of Animal Science UGM

Community service over the last 5 years:

- 1. Become a resource in the Webinar "Journal Management Towards SINTA Indexation" organized by Nahdlatul Ulama Al Ghazali University (UNUGHA) Cilacap (2020)*

Source of funds: Nahdlatul Ulama Al Ghazali University (UNUGHA) Cilacap

- 2. Dissemination of Dangke Processing to Increase Added Value of Cow's Milk in Farmers Groups in Purwobinangun Village, Pakem-Sleman District, Yogyakarta (2020)*

Source of funds: Thematic Grants for Laboratory Service, Faculty of Animal Science UGM

- 3. Resource Person for Livestock Chat with the theme "Potential of Milk & Eggs as Functional Food (2020)*

Source of funds: Faculty of Animal Science UGM

- 4. Resource persons in the Workshop on Authorship of Publications and Intellectual Property Rights for Lecturers of the Faculty of Biology UGM (2019)*

Source of funds: Faculty of Biology UGM

- 5. Become a resource person in the (2019) UPN Yogyakarta Scientific Journal Writing and Search Training*

- 6. Initiation of Packaged Egg Rendang for Fast Food Business in an Effort to Support Entrepreneurial Growth in Somokaton Sitimulyo Piyungan Hamlet, Bantul (2019)*

Source of funds: Faculty of Animal Science, Gadjah Mada University

- 7. As a Resource Person at the 4th Summer Course Program Integrated Food Security in ASEAN (2019)*

Source of funds: Faculty of Animal Science UGM

- 8. Become a Resource Person at the (2019) "Molecular Study of Lactic Acid Bacteria to Improve Feed Quality and Livestock Productivity" Training Faculty of Animal Science UGM*

- 9. Evaluation and Improvement of Sanitation and Hygiene from Pasteurized Milk SMEs in the Special Region of Yogyakarta (2018)*

Source of funds: Thematic Service Grants for the Faculty of Animal Science Laboratory UGM

- 10. Dairy Cow "Product Processing". Free Lecture Materials For You*

	<p><i>Our Breeders Serve (2018)</i></p> <p><i>Source of funds: Faculty of Animal Science UGM</i></p> <p>11. <i>Dairy Goats and Sheep (Free Lecture “For You Farmers We Serve”) (2017)</i></p> <p><i>Source of funds: Non-Binding Funds</i></p> <p>12. <i>Dissemination of Dairy Processing Technology in Andini Gotro Livestock Group (2017)</i></p> <p><i>Source of funds: Thematic Grant of the Faculty of Medicine. UGM</i></p> <p>13. <i>Strengthening Dairy Farmers Towards A Strong Dairy Agribusiness Concept: Improving the Quality of Fresh Milk (Members) (2016)</i></p> <p><i>Source of funds: Thematic Grants for the Faculty of Animal Science</i></p> <p>14. <i>Growing Farmers' Motivation in Processing Pasteurized Milk to Increase Added Value of Goat's Milk in Bejo Cattle Group, Kloposawit Hamlet, Girikerto Turi Sleman (Member) (2016)</i></p> <p><i>Source of funds: Service Grants for Graduate Program Faculty of Animal Science UGM</i></p> <p>15. <i>Village Community Empowerment as Livestock Tourism Village and Energy Independent Village (2016)</i></p> <p><i>Source of funds: BPPTNBH (PTN BH Funding Assistance)</i></p>
Industry collaborations over the last 5 years	-
Patents and proprietary rights	-
Important publications over the last 5 years	<p><i>Total number of publications: 48</i></p> <ol style="list-style-type: none"> <i>1. Genomic comparison of Lactobacillus casei ap and Lactobacillus plantarum dr131 with emphasis on the butyric acid biosynthetic pathways (Widodo, W., Ariani, A.L., Widiyanto, D., Haltrich, D.) (2021)</i> <p><i>Publisher : Microorganisms, 2021, 9(2), pp. 1–8, 425</i></p> <i>2. Cholesterol Assimilation of Two Probiotic Strains of Lactobacillus casei used as Dairy Starter Cultures (Widodo, W., Fanani, T.H., Fahreza, M.I., Sukarno, A.S.) (2021)</i> <p><i>Publisher : Applied Food Biotechnology, 2021, 8(2), pp. 103–112</i></p> <i>3. Total ammonia and N2O emission characteristics from Alcaligenes sp. LS2T cultures and its application on laying hen manure associated with different pH conditions (Azkarahman, A.R., Erwanto, Y., Yusiati, L.M., Widodo, W., Fitriyanto, N.A.) (2021)</i> <p><i>Publisher :International Journal of Environment and Waste</i></p>

Management, 2021, 27(1), pp. 1–20

4. *Screening for probiotic of lactic acid bacteria isolated from the digestive tract of a native Aceh duck (Anas platyrhynchos) (2020)*

Publisher : BIODIVERSITAS Journal of Biological Diversity, 21: 3001-3007

5. *Detection and expression analysis of the bile salt hydrolase gene in Pediococcus and Lactobacillus (2020)*

Publisher : Biodiversitas Journal of Biological Diversity, Volume 21(12), 2020: 5901-5905.

6. *Inulinase Activity of Extracellular Protein of Lactobacillus casei AP in Different Growth Conditions (2020)*

Publisher : Key Engineering Materials 101-106. *International Conference on Science and Technology* 2019. <https://www.scientific.net/KEM.840.101>

7. *Quality of Goat Milk Cheese with Addition of Rice Bran oil Ripened Using Lactobacillus casei and Streptococcus thermophiles (2020)*

Publisher : Jurnal Ilmu dan Teknologi Hasil Ternak (JITEK), 15:1-12

8. *Amomum compactum Soland ex Maton Addition as Essential Oil Source and Its Effect on Ruminal Feed Fermentation by in Vitro Analysis (2019)*

Publisher : Journal of BIOTROPIA Vol 26 No. 1: 1-5.

9. *Growth and fosE gene expression in inulin-containing medium of two strains of Lactobacillus casei originated from the human intestinal tract (2019)*

Publisher : BIODIVERSITAS Volume 20: 1757-1762

10. *Characteristics of fermented goat milk using combination of kombucha and Lactobacillus casei starters (2019)*

Publisher : IOP Conf. Series: Earth and Environmental Science 387 (2019) 012077

11. *Addition of Essential Oil Source, Amomum Compaction Soland Ex Maton, and Its Effect On Ruminal Feed Fermentation In-Vitro (2019)*

Publisher : Jurnal BIOTROPIA Vo: 1-5

12. *Identification of Conjugated Linoleic Acid in Milk Fermented by Probiotics Originating in the Gastrointestinal Tract (2019)*

Publisher : Buletin Peternakan Vol. 43 (2): 147-150

13. *Mengidentifikasi Peptida Bioaktif Angiotensin Converting Enzyme-inhibitor (ACEi) dari Kasein β Susu Kambing dengan*

	<p><i>Polimorfismenya Melalui Teknik In Silico</i>(2019)</p> <p><i>Publisher : Jurnal Aplikasi Teknologi Pangan 7 (4) 2018: 180-185</i></p> <p>14. <i>Study of Local Herb Potency as Rumen Modifier: Red Ginger (Zingiber officinale Var. Rubrum) Addition Effect on In Vitro Ruminant Nutrient Digestibility</i> (2019)</p> <p><i>Publisher : Jurnal Animal Production Vol: 30-37</i></p> <p>15. <i>Characteristics of fermented goat milk using combination of kombucha and Lactobacillus casei starters</i> (Nurliyani,, Indratiningsih,, Widodo,, Sukarno, A.S., Suciati, F.) (2019)</p> <p><i>Publisher :IOP Conference Series: Earth and Environmental Science, (2019), 387(1), 012077</i></p> <p>16. <i>Antidiabetic effect of milk fermented using intestinal probiotics</i> (Widodo, W., Harsita, P.A., Sukarno, A.S., Nurrochmad, A.) (2019)</p> <p><i>Publisher :Nutrition and Food Science, 2019, 49(6): 1063–1074</i></p> <p>17. <i>Peptide identification and expression analysis of genes involved in inulin metabolism in Lactobacillus casei AP</i> (Kusmiyati, N., Sunarti, S., Wahyuningsih, T.D., Widodo, W.) (2019)</p> <p><i>Publisher : Applied Food Biotechnology, 2019, 6(4): 217–224</i></p> <p>18. <i>Effect of Synbiotics Lactobacillus casei AP and Inulin Extract Dahlia pinnata L. In Enteropathogenic Escherichia coli - Induced Diarrhea</i> (Kusmiyati, N., Sunarti,, Wahyuningsih, T.D., Widodo) (2019)</p> <p><i>Publisher : Proceedings - 2018 1st International Conference on Bioinformatics, Biotechnology, and Biomedical Engineering, BioMIC 2018, 2019, 8610642</i></p> <p>19. <i>Microbiological qualities of goat milk obtained under different milking systems at a smallholder dairy farm in Yogyakarta, Indonesia</i> (Ismiarti,, Suranindyah, Y.Y., Widodo) (2019)</p> <p><i>Publisher :International Journal of Dairy Science, 2019, 14(1: 29–35</i></p> <p>20. <i>The Effect of Different Starter Cultures of Lactobacillus paracasei M104 and Pediococcus pentosaceus M103 on the Physicochemical and Microbial Qualities of Fermented Goat Milk</i> (W Widodo, AP Sakti, AS Sukarno, E Wahyuni, N Nurliyani) (2019)</p> <p><i>Publisher :Jurnal Ilmu dan Teknologi Hasil Ternak (JITEK) 14 (2), 70-77</i></p> <p>21. <i>The Growth and fosE gene expression in inulin-containing medium of two strains of Lactobacillus casei originated from the human intestinal tract</i> (AC AFIDAH, TDWI WAHYUNINGSIH, W Widodo)</p>
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(2019)

Publisher : Biodiversitas Journal of Biological Diversity 20 (9): 2758-2763

22. *Feed Supplementation with Encapsulated Indigenous Probiotic Lactic Acid Bacteria Increased Broiler Chicken Performance (MSI Pradipta, S Harimurti, W Widodo) (2019)*

Publisher :ASEAN Journal on Science and Technology for Development 36 (1), 29-34

23. *Study of Local Herb Potency As Rumen Modifier: The Effect of Red Ginger (Singiber Officinale Var.Rubrum) on Parameters of Ruminal Fermentation In Vitro (2018)*

Publisher :IOP Conf. Series: Earth and Environmental Science 119 (2018) 012058

24. *Prebiotic Effect of Inulin Extract from Dahlia Tubers (Dahlia pinnata L.) On the Growth Performance of Intestinal-origin Lactobacillus Casei AP. (2018)*

Publisher :Pakistan Journal of Nutrition 17: 405-410.

25. *Microbiological and Physicochemical Quality of Pasteurized Milk Supplemented with Sappanwood Extract (Caesalpinia sappan L.) (2018)*

Publisher : International Food Research Journal, 25: 392-298.

26. *Effects of Four Essential Oils on Nutrients Digestibility of In Vitro Ruminal Fermentation*
Effects of Four Essential Oils on Nutrients Digestibility of In Vitro Ruminal Fermentation (2018)

Publisher :Buletin Peternakan, 42: 122-126.

27. *Kefir Fermented with Glucomannan from Porang Tuber to Improve the Health of Metabolic Syndrome Rats (2017)*

Publisher :Proceedings of 3rd International Conference on Food and Biosystems Engineering (3rd FaBE, 2017), Yunani, 1- 4 Juni 2017. Pages: 100-109

28. *Characterization and Antioxidant Activity of Fermented Milk Produced with a Starter Combination (2017)*

Publisher :Pakistan Journal of Nutrition 16 (6): 451-456, 2017.

29. *The quality of Fermented Milk Produced Using Intestinal-Origin Lactic Acid Bacteria As Starters (2017)*

Publisher :International Food Research Journal

30. *Identification of Bacterial Proteins Involved in Inulin Metabolism from Colon-Derived Lactobacillus Casei Strains (2017)*

Publisher :Pak. J. Biotechnol. 14(3): 303-311

31. *Chemical and sensory quality of milk fermented by starter combination of Lactobacillus plantarum Dad 13, Lactococcus lactis, and Yeast (2017)*

Publisher :The 7th International Seminar on Tropical Animal Production (ISTAP), September 12-14, 2017, Yogyakarta, Indonesia. Pages: 400-408.

32. *The Capability of Gastrointestinal-origin Lactobacillus casei Strains to Alleviate Hyperglycemia in Rats (Rattus norvegicus): An In Vivo Study (2017)*

Publisher : International Conference "Food Structures, Digestion & Health", Sydney Australia, 24-27 Oktober 2017

33. *Identification of Bacterial Proteins Involved in Inulin Metabolism from Colonderived Lactobacillus Caseistrains (2017)*

Publisher :Pak. J. Biotechnol. 14: 303 -311.

34. *Pengaruh Mikroenkapsulasi Probiotik Bakteri Asam Laktat Indigenous Unggas terhadap Kemampuan Eksklusi Kompetitif pada Salmonella enteritidis dan Escherichia coli Secara In Vitro (2017)*

Publisher :Buletin Peternakan, 41 (2): 134-141

35. *Efektivitas Celup Puting Menggunakan Ekstrak Buah Mengkudu (Morinda citrifolia) terhadap Hasil Uji California Mastitis Test (CMT) (2017)*

Publisher :Sains Peternakan, 59: 66-69.

36. *Pengaruh Senyawa Fenol dalam Buah Mengkudu (Morinda citrifolia) terhadap Uji CMT (California Mastitis Test) Sapi Perah Mastitis Subklinis (Activity of Phenol of Morinda Citrifolia as Natural Antibacteria to Inhibit the Growth of Mastitis-Associated Bacteria). (2017)*

Publisher : Buletin Peternakan. 41 (4): 392-398

37. *Study of Local Herb Potency as Rumen Modifier: The Effect of Red Ginger (Zingiber officinale Var.Rubrum) on Parameters of Ruminal Fermentation In Vitro (2017)*

Publisher : IOP Conf. Series: Earth and Environmental Science Vol. 119 (2018) 012058

38. *Evaluasi Isolat Lactobacillus paracasei M104 Asal Susu Kambing sebagai Starter Fermentasi Susu dengan Berbagai Level Kombinasi Medium (Author 3 of 4) (2016)*

Publisher : Prosiding Simposium Nasional Penelitian dan Pengembangan Peternakan Tropik Tahun 2016. Fakultas

Peternakan Universitas Gadjah Mada, Yogyakarta. ISBN: 978-979-1215-28-2, hal: 399

39. *Evaluation of Lactic Acid Bacteria from Ettawah Crossbred Goat Milk as Probiotic (Author 3of 3) (2016)*

Publisher : Proceedings of The 17th Asian-Australasian Association of Animal Production Societies Animal Science Congress, 22-25 August (2016), Fukuoka Japan

40. *Effect of Kaempferia galanga L. on in Vitro Nutrients Digestibility, Ruminal Fermentation and Methane Production (Author 2 of 4) (2016)*

Publisher : The 17th Asian-Australasian Association of Animal Production Societies Animal Science Congress, 22-25 August (2016), Fukuoka Japan

41. *Studies on Antihyperglycemia and Antihypercholesterolemia in Rats (Rattus norvegicus) using Intestinal-origin Probiotics Strains (Author 1 of 5) (2016)*

Publisher : International Conference on Beneficial Microbes; ICOBM (2016), 31 Mei – 2 Juni (2016) di Phuket, Thailand

42. *The Use of Maltodextrin-Skim Milk Powder Mixture to Preserve Cell Viability of Poultry-origin Lactic Acid Bacteria during Spray Drying and Storage (Author 4 of 4) (2016)*

Publisher : International Conference on Beneficial Microbes; ICOBM (2016), 31 Mei – 2 Juni (2016) di Phuket, Thailand

43. *Short Communication: Genetic Identification of Local Pigs, and Imported Pigs (Landrace and Duroc) Based on Cytochrome b Sequence Analysis (Author ke 5 of 5) (2016)*

Publisher : Biodiversitas 17 (1): 270-274

44. *Effects of Supplementation of Microencapsulated Indigenous Probiotics Lactic Acid Bacteria on the Performance of Broiler Chickens at a Starter Phase (Author ke 3 of 3) (2016)*

Publisher : Proceedings of the 1st UGM International Conference on Tropical Agriculture (ICTA), 25-26 October, (2016). Yogyakarta, Indonesia

45. *Effects of Four Essential Oils on Nutrients Digestibility of in Vitro Fermentation with Ongole Crossbred Cattle Rumen Liquor (Author 2 of 4) (2016)*

Publisher : Proceedings of the 1st UGM International Conference on Tropical Agriculture (ICTA), 25-26 October, (2016). Yogyakarta, Indonesia

	<p>46. <i>Antibacterial Quality of Pasteurized Milk Supplemented with Sappanwood Extract (Caesalpinia sappan L.) (Author 3 of 3) (2016)</i> <i>Publisher : Proceedings of the 1st UGM International Conference on Tropical Agriculture (ICTA), 25-26 October, (2016). Yogyakarta, Indonesia</i></p> <p>47. <i>Isolation and Identification of Goat Milk-Derived Lactobacillus paracasei M104 and Pediococcus pentosaceus M103 and Their Potential Use as Starter Culture for Fermentation ((Author 1 of 5) (2016)</i> <i>Publisher :Journal of Microbiology, Biotechnology and Food Sciences Vol. 5 (4) pages: 374-377. ISSN: 1338-5178</i></p> <p>48. <i>Probiotics in Poultry (2016)</i> <i>Publisher : Beneficial Microorganism in Agriculture, Aquaculture and Other Areas (Liong MT, and Steinbuechel A (editor). Springer International Publishing. Switzerland ((2016)): 1-19. ISBN: 978-3-319-23182-2</i></p>
<p>Activities in specialist bodies over the last 5 years</p>	<p>-</p>